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AUTHOR Walton, Bob
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ABSTRACT

Designed to provide managers with a basic introduction to the planning components and procedures involved in planning for library automation, the overview provided here offers guidelines for eight documents that may be produced as part of such a study: (1) Automation Project Long Range Plan (60 Month Plan), an executive summary document providing basic descriptive information about the proposed project; (2) Cost/Benefit Analysis Report, which documents the various automation options available to the library and the levels of services and benefits offered by each; (3) Cost Allocation and Governance Plan (Multi-Institution Projects), which identifies options for each variation of each model identified; (4) Automation Project Justification Report, which is based on the results of the cost/benefit and cost allocation/governance reports; (5) Data Conversion Cost Analysis and Plan, which evaluates various approaches and their related costs; (6) Project Task Inventory and Implementation Schedule, which includes task staffing assignments and task alternative paths; (7) Project Budget Plan, which includes cost type and amount, division of the cost over time, and source of project income; and (8) Telecommunications Cost Analysis and Plan, including data communication models, cost vs. performance factors, growth potential and technical obsolescence, ownership of telecommunications hardware/software, and allocation of telecommunications costs. A checklist for documenting the costs of automated library systems is attached. (BBM)

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PLANNING FOR INDIVIDUAL AND COOPERATIVE LIBRARY AUTOMATION PROJECTS:

AN OVERVIEW OF THE PROCESS

by

Bob Walton
Automation Consultant
Texas State Library

• July 31, 1984 (Revised)

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PLANNING FOR INDIVIDUAL AND COOPERATIVE LIBRARY AUTOMATION PROJECTS: AN OVERVIEW OF THE PROCESS

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As the cost/benefit ratios of automated systems continues to improve and the entry level cost of a standalone, turnkey system continues to drop, an increasing number of libraries will find an automation project is within their reach. In most cases, whether the project is a single institution or a multi-institutional cooperative, the investment in an automated library system will be a long term, multi-year financial committment. This results in a complex planning environment which can be addressed only through extensive and careful planning. This overview is designed to provide managers with a basic introduction to the planning components and procedures which should be completed by library staff, perhaps with the assistance of an automation consultant.

There are eight (8) documents which, depending upon the specific automation objectives of the library institution(s), may be produced as part of the study.

Document #1: Automation Project Long Range Plan (60 Month Plan).

Document #2: Cost / Benefit Analysis Report.

Document #3: Cost Allocation And Governance Plan (Multi-institutional Projects).

Document #4: Automation Project Justification Report.

Document #5: Data Conversion Cost Analysis And Plan.

Document #6: Project Task Inventory And Implementation Schedule.

Document #7: Project Budget Plan.

Document #8: Telecommunications Cost Analysis And Plan.

1. Automation Project Long Range Plan (60 Month Plan).

The automation project Long Range Plan is an executive summary document (10-15 pages) which provides basic descriptive information about the proposed project to inform library supporters, funders, staff and patrons. This document is designed to serve as a non-technical abstract of the major automation goals of the project, the general tasks necessary to accomplish the stated goals, and a general timetable for implementation of the project.

Typically, the Long Range Plan would be organized as follows:

1.1 Project history;
1.2 Project goals and service objectives;
1.3 Participating institutions;
1.4 Project organization and governance;
1.5 Description of the computer environment (single institution, network, etc.) to be established;
1.6 Project staff;
1.7 Project resources; and,
1.8 Timetable.

2. Cost / Benefit Analysis Report.

Few library automated systems operate within the 'ideal' environment. Every institution has certain political, geographic, and financial resource constraints within which any activity, including automated library systems, must operate. In order to properly document the various automation options (models) available to the library and the varying levels of servives and benefits [within each model] which can be achieved - a cost/benefit comparison should be performed. It is important to note that the purpose of a cost/benefit analysis is not to focus only on the possible reduction of library costs to deliver services. Cost/benefit is a study procedure to present managers with the different benefit and services 'packages' which are available and the related costs to deliver those benefits and services. This study is necessary in order to:

(a) Identify each model capable of deliverying desired services and benefits (within the broad fiscal capabilities of the library);

(b) Specifically define the degrees of service delivery within each model; and,

(c) Indicate the detailed costs to implement and maintain each system model - the costs associated with providing the defined services.

The study should, for each model identified, provide a detailed narrative description of the technical hardware/software environment which would result and a cost profile using a five (5) or seven (7) year Least Total Cost algorithm [depending on the intended or anticipated life of the system].

The cost profile should identify every possible cost element associated with the project including, but not limited to, the following:

(One Time Cost Elements)

2.1 Computer equipment;
2.2 Telecommunications equipment;
2.3 Computer software;
2.4 Site preparation;
2.5 Consultant fees;
2.6 Training;
2.7 Legal expenses;
2.8 Shipping & installation;
2.9 Finance charges.

(Ongoing Annual Cost Elements)

2.10 Personnel;
2.11 Personnel benefits.
2.12 Hardware maintenance (computer and telecommunications);
2.13 Software support (similar to maintenance);
2.14 Supplies and computer consumables (magnetic tapes, etc.);
2.15 Travel;
2.16 Postage (if system produces large mass mailings);
2.17 Utilities;
2.18 Dues (user groups, etc.);
2.19 Site rental/lease, if appropriate;
2.20 Insurance;
2.21 Management support costs (accountant fees, auditor fees,etc.);
2.22 Telecommunications costs;
2.23 Indirect costs;

{ Special Costs Associated With Some Or All Models }

2.24 Special vendor assumed costs (vendor agrees to perform and absorb costs of some retrospective data conversion, etc.);
2.25 Retrospective data conversion;
2.26 Special vendor discounts (library agrees to be a test site, library agrees to accept used equipment, etc.)
2.27 Performance bonding fees.

3. Cost Allocation And Governance Plan. (Multi-Institution Projects).

Before libraries can come together to share the costs and benefits of an automated library system, it will be necessary to carefully define:

(a) The proper way(s) to assign costs to the participants, and,
(b) How the project will be managed.

For these reasons, various governance and cost allocation options should be identified and defined for each variation of each model identified. Until this information is documented and available, it is difficult for a library manager to evaluate each possible model's related benefits and costs given the needs and objectives of that particular library institution. First, each different approach or formula to divide project costs between member institutions must be defined and described (flat membership cost allocation, costs assigned per terminal, costs assigned by transactions, a combination, etc.). Secondly, given the predicted total cost of each model (based upon the Cost/Benefit Analysis Report), specific cost data for each participating library institution must be defined for each of the costing formulas under consideration.

Governance must be studied as a separate, though related, issue. While it may be possible to get participating institutions to agree on assignment of costs, failure to reach a concensus about decision making for the cooperative project will place the project in jeopardy. Governance must be specifically defined since it will be necessary for the governing body of each participating library institution to contractually obligate that institution to the cooperative effort.

At a minimum, this study process should define:

3.1 Purpose and goals of the cooperative project;
3.2 Legal and tax status;
3.3 Membership categories;
3.4 Governance bylaws, by which decisions will be made (voting rights, etc);
3.5 Structure and organization (committees, user groups, task forces, etc.);
3.6 How costs will be allocated;
3.7 Distribution of title to all property (hardware, software, etc.);
3.8 Ownership of the database;
3.9 How institutions can be admitted to the cooperative;
3.10 How institutions can withdraw from the cooperative.

4. Automation Project Justification Report.

Based upon the results of both the (a) Cost/Benefit Analysis Report and the (b) Cost Allocation And Governance Plan, the management team can build a priority ranking of the different automation models identified and, in some cases, the service delivery levels within certain models. How this ranking is justified will be based on a mixture of the cost/benefit advantages of certain models within a framework of what the management team perceives as the mission and needs of the organization(s). As shown below, the justification report differs in focus and format depending on whether the proposed project is for a single institution institution or library cooperative .

4.1 Single Institution Automation Project Justifications.

A single library institution will rank the models based primarily on the comparison of benefits to costs. This comparison should be based on information from the Cost/Benefit Analysis Report. For example, options could be compared using the maximum net service benefits algorithm which relates the current and future system costs to benefit values [both adjusted for changing value of the dollar] for the same, defined time period. For the single institution, issues of governance and cost allocation are not applicable.

4.2 Multi-Institutional Automation Project Justifications.

To justify the cooperative automation project, the management team must take into account and balance the three critical elements of the project:

(a) As with the single institutional justification, the first

justification criteria is the model which presents the optimal cost and benefits combination;

(b) Given that automation model, a cost allocation strategy which fairly distributes costs while providing the maximum flexibility for institutional participants; and,

(c) A governance strategy which provides long term stability and protection for the institutions involved in the project.

5. Data Conversion Cost Analysis And Plan

With few exceptions, automation projects will involve a long, difficult, and expensive data conversion process. Lack of proper attention and planning for this activity can result in expensive hidden project costs and, frequently results in projects falling far behind schedule. When the computer environment has been properly prepared and is ready, will the library have machine readable data to load into and operate on the system ?

As with the examination process required to select the optimal computer equipment/software model for the library, so must the various approaches and related costs to prepare and convert data evaluated. There are three primary types of data which must, at some point during the implementation of the automated system, be converted to machine readable form for manipulation by the automated system. These are:

(a) Bibliographic data (one record per library material title);

(b) Patron data (one record per registered patron and/or staff); and,

(c) Item data (one record per physical library material piece).

The costs and time necessary to perform data conversion vary widely depending on the whether the library completes the conversion independently or in collaboration with the system vendor. Costs also are directly related to the quality and completeness of the data which was created and maintained by the existing system. The library should conduct a study to identify and describe each of the data conversion options available to it. In most cases, libraries will accomplish the conversion of their data (all three types) by a combination of methods - including some orginal key entry by library staff.

In evaluating the various data conversion options, managers should look for an alternative that balances and optimizes the following factors:

5.1 Service bureau costs to the library:
- Data base royalities;
- Special equipment and/or software;
- Setup fees and processing charges;
- Costs for vendor labor (usually costed by keystroke);
- Supplies & shipping/handling;
- Special services (authority control, duplicate record elimination, etc.).

5.2 Inhouse costs to the library:
- Labor and benefits;
- Supplies;
- Equipment/software.

5.3 Timetable necessary to convert the data to machine readable form.

5.4 Quality of the records resulting from the conversion:
- Accuracy of information;
- Completeness;
- Commonality - adherence to prescribed standards.

5.5 Database maintenance (during the building of the databases and once the system is in full operation.)

6. Project Task Inventory And Implementation Schedule.

At some point during any automation project, it becomes necessary to become very specific about exactly how the project will be implemented. While there are many different approaches managers can use to control and monitor the implementation of an automated system, the process should focus on three (3) primary elements:

6.1. Task Inventory.
Each of the specific tasks necessary to procure, install, test, and bring the system into complete and full operation should be identified (write specifications for site preparation, schedule installation of data lines from telephone company, advertise for automation librarian, etc.).

6.2. Task Staffing Assignments.
For each task, specific staff should be identified who will perform and be responsible for each of the tasks on the inventory.

6.3. Schedule.
Each task should be placed on a schedule showing the beginning and completion deadlines for the task. It is recommended that libraries select a schedule monitoring process, such as critical path scheduling and analysis, which can document:

6.3.1 Task Deadlines.
Establish a specific date the task is to be completed.

6.3.2 Task Relationships.
Document tasks which are dependent on or related to

other tasks. For example, the loading of bibliographic tapes into a standalone system comes after all or some of the following (a) acquisition and testing of tape drive equipment, (b) load of software by vendor to build database, (c) conclusion of building database by retroconversion vendor.

6.3.3 Task Alternative Paths.
Should a critical path be violated, will the library know (a) alternative ways to accomplish the task to regain position on the original schedule, or, (b) how to calculate and adjust the remaining tasks and to shift backwards (or in some cases forward) the remaining tasks scheduled.

7. Project Budget Plan.

Once a particular automation model has been selected and the appropriate task/implementation schedule determined, it will be necessary for library managers to prepare an exact project budget. This budget is designed to show the specific funds to be spent and when those costs will be paid. When designing the project budget, it is necessary to consider the following:

7.1. Cost Type And Amount.
Line items should be established for each specific project cost (15 backup disk packs, 12 anti-static mats, 240 hours of contract data entry for patron record processing, etc.). A unit and total cost should be specified for each of these line items.

7.2. Division Of The Cost Over Time.
Certain costs will be divided between different fiscal budget periods. The budget plan should be oriented to the fiscal cycle of the institution and document this division of costs over multiple years (hardware payments divided over 60 months, etc.).

7.3. Source Of Project Income.
In most cases, libraries must secure additional funding - over and above the normal ongoing library budget(s) - to pay for the procurement and installation of the system. While many capital expenditures are taken from the supplemental funding, for some project costs, all or part, are 'absorbed' from funds out of the regular library budget (staff, supplies, utilities, etc.). The budget should clearly document the source of funds for each expenditure.

8. Telecommunications Cost Analysis And Plan

Many library automation projects will provide services to users in locations which are too far (geographically) from the computer site to be connected directly the the computer system. This requires the use of data communications hardware/software to service these remote locations. On smaller projects, requiring only one or two different sites and 10 or less terminals, the costs and options for data communications can be included as one of the design and cost elements of the Cost / Benefit Analysis Report. In larger systems, however, a seperate study should be completed to focus on the different cost - vs - benefits options of various data communications models. This type of study will usually need to be completed by an automation consultant or a specialist in computer data communications.

Issues which would be included in this type of study would include:

8.1. Data Communications Models.
The consultant would explore the various types of data communications models available to the library, including:

(a) Traditional telecommunications (voice grade telephone lines, data transmission, lines, etc.)
(b) Special telecommunications designs (multiplexed devices, multi-drop lines, packet-switching, etc.)
(c) Emerging options (cable loops, microwave communications, fiber optics, etc.)

8.2. Cost - vs - Performance.
The consultant must identify and project each of the costs necessary to deliver the computer services to each library location. It is also important to measure each alternative in

terms of the cost relationship between the (a) reliability of the data communications model and the (b) cost to provide that level of reliability.

8.3. Growth Potential And Technical Obsolescence.
Certain models offer restricted or open library network growth potential. The long term options and constraints of each model should be projected and documented.

8.4 Ownership Of Telecommunications Hardware/Software.
As with other computer equipment, software and data - the title of ownership of hardware, software and databases of the cooperative project should be clearly stated.

8.5. Cost Allocation Of Telecommunication Costs.
In most library cooperatives, the member libraries are different distances from the primary computer facility and therefore result in different telecommunication costs to the organization. There are many different formulas and approaches to the allocation of telecommunication costs to participating institutions and care must be taken to clearly define (a) the method used to allocate costs and (b) estimates of these costs for each participating institution.

DOCUMENTING THE COSTS OF AUTOMATED LIBRARY SYSTEMS:

A CHECKLIST

by

Bob Walton
Automation Consultant
Texas State Library
PO Box 12927 Austin, Texas 78711

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DOCUMENTING THE COSTS OF AUTOMATED LIBRARY SYSTEMS:

A CHECKLIST

1. Personnel costs (for all activities related to the procurement, installation, and continued operation of the system).

   - Direct salaries
   - Employee benefits
   - Institutional indirect costs related to salary/benefits

2. Computer equipment.

   - Central processing unit & all cabinets and cabling
   - Memory components
   - Operator console unit
   - Magnetic tape drive system
   - Disk storage system (including controllers and disk packs)
   - Printers
   - Terminals, wands, and local printers
   - Microcomputer backup systems

3. Communications equipment.

   - Modems
   - Multiplexors/concentrators
   - Port expansions

4. Other Equipment

- Forms burster
- Backup power system

5. Software.

- Library software
- System software (operating system, microcode, languages, etc.)
- Documentation

6. Maintenance.

- Hardware
- Software

7. Telecommunications.

- Line charges
- Line installation costs
- Telecommunications consultant

8. Service bureau fees, where applicable.

- Transaction costs
- Computer access charges
- Password charges
- Connect time charges
- Data storage fees
- Royalty charges
- Special processing fees (COM tape processing, etc.)

9. Training.

- Training fees
- Training materials
- Travel

10. Data conversion costs.

- Service bureau fees & royalities
- Machine readable labels for books and patron cards
- Special bibliographic file processing (authority processing, duplicate record elimination, etc.)
- Legal costs to establish data conversion contract

11. Automated system staffing support.

- Office space
- Furniture
- Telephone costs
- Supplies
- Utilities
- Duplication and mailing costs
- Travel

12. Procurement process related costs.

- Automation consultant contract fees
- Legal fees
- Lease and/or interest charges
- RFP/Contract document preparation costs
  - ✓ Staff salaries & benefits
  - ✓ Document preparation, duplication, and distribution costs

- Onsite visitation travel expenses

13. System Preparation, Installation, & Implementation Related Costs.

- Architectural fees for site preparation
- Staff preparation of site specifications, etc.
- Site preparation costs
  - ✓ Suspended flooring
  - ✓ Air conditioning
  - ✓ Humidity and air filtering control
  - ✓ Electrical and plumbing alterations
  - ✓ Alarm systems
  - ✓ Security system
  - ✓ Computer room furniture and storage racks
  - ✓ Cabling
- Shipping charges & insurance
- Installation charges
- Performance bond costs
- Taxes
- Offsite storage costs

14. Supplies And Consumables

- Stock forms (overdue notices, etc.)
- Patron cards
- Computer paper (line printer and local printers)
- Magnetic tapes